1. (Amended) A[n interoperable] receiver comprising:

first means for receiving signals in a first band, said first band including multiple carriers;

second means for downconverting said received signals in the first band;

third means for receiving signals in a second band, said second band including multiple carriers;

fourth means for downconverting signals in the second band; and

fifth means for selectively outputting signals from the first band or the second band.

Please cancel Claims 2, 3 and 25.

Please add the following new Claim:

-- 26. A receiver comprising:

first means for receiving first and second ensembles, each ensemble having multiple carriers on which multiple signals are modulated and

second means for processing said first and said second ensembles to output said signals simultaneously. --

Clean copies of the replacement paragraph as amended are provided below:

Fig. 2 is a diagram which illustrates the system 10 of Fig. 1 in greater detail with a single satellite and a single terrestrial repeater. Fig. 2 shows a broadcast segment 22 and a terrestrial repeater segment 24. In the preferred embodiment, an incoming bit stream is encoded into a time division multiplexed (TDM) signal using a coding scheme such as MPEG by an encoder 26 of conventional design. The TDM bit stream is upconverted to RF by a conventional quadrature phase-shift keyed (QPSK) modulator 28. The upconverted TDM bit stream is then uplinked to the satellites 12 and 14 by an antenna 30. Those skilled in the art will appreciate that the present invention is not limited to the broadcast segment shown. Other systems may be used to provide signals to the satellites without departing from the scope of the present teachings.

In order to appreciate the present teachings, reference is made to Fig. 6. Fig. 6 is a detailed view of antenna module 100' and tuner module 200' capable of receiving a single ensemble only. In the preferred embodiment, the system disclosed in Fig. 6 is implemented in accordance with the teachings of U.S. Patent Application No. 09/435,317, entitled **Tuner Architecture for Satellite and Terrestrial Reception of Signals**, filed November 4, 1999 by P. Marko and A. Nguyen (Atty Docket No. XM-0003), the teachings of which are incorporated herein by reference. The signal received by the antenna 110' of the antenna module 100' is amplified by a first low noise amplifier 122' prior to being input to a first image filter 124'. The output of the first image filter 124' is input to a second low noise amplifier 126'. The output of the second low noise amplifier 126' is fed back to the first low noise amplifier 122' via an automatic gain control (AGC) circuit 128' for gain stabilization as will be appreciated by those skilled in the art. The output of the second low noise amplifier 126' constitutes the output of the antenna module 100' and is input to the tuner module 200' via an RF cable 130'.

In each path 231' or 233', a surface acoustic wave (SAW) filter 212' or 214', respectively, is disposed. The first SAW filter 212' isolates the signals from a selected ensemble received from a terrestrial repeater. The second SAW filter 214' isolates the signals from a selected ensemble received from both satellites. The output of each SAW filter 212' and 214' is input to a back end integrated circuit (IC) which mixes the filtered signal down from a first intermediate frequency (IF1) to a second intermediate frequency (IF2). For example, for the terrestrial arm 231', IF1 may be 209.760 MHz and IF2 2.99 MHz.

In addition to the use of a single SAW filter to process the two satellite signals, a novel aspect of the embodiment of Fig. 6 is that since the satellite and terrestrial signals for ensemble A are the mirror image of the satellite and terrestrial signals for ensemble B, both signals can be received by using high side and low side injection into the first mixer 208' using a signal source 221' driven by the switched VCO 219'. See the above-referenced patent application filed by P. Marko and A. Nguyen (Atty Docket No. XM-0003) for a detailed discussion of this feature.

The mixer 208 will have an approximate 800 MHz output which, in the illustrative embodiment, is filtered by a 12.5 MHz wide SAW filter 212. Note that the use of a single SAW filter in place of the two SAW filters 212' and 214' of Fig. 6 is one advantage of the implementation of Fig. 7. The SAW filter 212 serves to select the entire XM band 40 (see Fig. 3a) including both ensemble A and ensemble B.

As illustrated in Fig. 5, in the preferred embodiment, at the transport layer 320, the combiner 328 uses a conventional Viterbi decoder (not shown) on soft decision bits from the first and second satellites 12 and 14 as, in the preferred embodiment, these signals are convolutionally encoded. Next, the Viterbi decoded signals are input to a Reed-Solomon decoder. The Reed-Solomon simply checks the validity or integrity of each codeword and applies corrections to a small percentage of errors. The RS decoded composite satellite signal is then ready for combination with the terrestrial repeater

signal. (Those skilled in the art will appreciate that Viterbi decoders and Reed-Solomon decoders are well known in the art.)

Clean Copies of the Claims as amended are provided below:

1. A receiver comprising:

first means for receiving signals in a first band, said first band including multiple carriers;

second means for downconverting said received signals in the first band;

third means for receiving signals in a second band, said second band including multiple carriers;

fourth means for downconverting signals in the second band; and

fifth means for selectively outputting signals from the first band or the second band.